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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): P051

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on 7/13/06

Signature

Typed or printed name Michael O Scheinberg

Application Number	Filed
09/954,717	09/17/2001

First Named Inventor: Kenneth Noddings

Art Unit	Examiner
1734	Sing P. Chan

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☐ attorney or agent of record. Registration number _____
- ☒ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 36,919

Signature

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Typed or printed name

512-473-0005
Telephone number

July 13, 2006
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

Attorney Docket No.: P051

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.: 09/954,717 ART UNIT: 1734

APPLICANT(S): Kenneth Noddings et al. EXAMINER: Sing P. Chan

FILING DATE: September 17, 2001

TITLE: Fabrication of Optical Devices and Assemblies

Commissioner for Patent
P.O. Box 1450
Alexandria, VA 22313-1450

Arguments in Support of Pre-Appeal Brief Request for Review

The invention entails molding a waveguide to connect optical components. Rather than the prior art method of actively aligning an optical fiber with a component by observing the output of the fiber, a component is accurately positioned in a precision mold and a waveguide is formed in the mold to connect the component with the fiber. U.S. Pat. No. 5,031,984 to Eide et al. ("Eide") specifically requires active alignment to a component (col. 5, lines 35-40), whereas U.S. Pat. No. 4,662,962 to Malavieille ("Malavieille") teaches only splicing optical fibers and does not teach connecting a fiber to an active device.

Claim 19 stands rejected under 35 U.S.C. 102(b) as anticipated by Eide. Claim 19 includes: "forming the optical waveguide aligned with the optical component by shaping a formable material using the tool." Eide teaches butting optical fibers together. "Thus, when the fibers are joined at junction 18, the cores of all three fibers are in contact with each other." Col. 4, lines 8-19. "The fiber ends should be as close together as possible." Col. 6, lines 13-14. The

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fibers are held in place by an ultraviolet curable adhesive that includes index-matching characteristics. The Examiner considers the adhesive to be a "waveguide." With the fibers butting or very close, however, the waves are not "guided" between the fibers.

Definitions of waveguide were provided in Applicant's May 5, 2005 Response, after the previous Examiner asserted that an opaque potting compound was a waveguide. The Photonics dictionary defines waveguide as: "A system or material designed to confine and direct electromagnetic waves in a direction determined by its physical boundaries." Eide's adhesive 20 does not "confine and direct electromagnetic waves in a direction determined by its physical boundaries" when Eide's optical fibers are butted against one another. In his obviousness rejection of claims 1, the Examiner appears to define a waveguide as anything that forms an optical path between components. That is not the definition of a waveguide. When someone uses an infrared remote control for a television, the air forms an optical path between the remote and the TV, but the air is not a waveguide because it does not "confine and direct" the IR radiation "in a direction determined by its physical boundaries." Similarly, the adhesive at two butting optical fibers does not confine and direct the light in a direction determined by its physical boundaries and so is not a waveguide. Applicants understand that claim terms are given their broadest reasonable interpretation during examination, but applicants submit that interpreting the adhesive as a waveguide when the optical fibers are butted end-to-end is not reasonable. The Examiner states that Eide says the fibers can be separated, but the recommended gap is one tenth to one half the diameter of the fiber. Col. 7, line 4-10. With this small gap, the adhesive is not a waveguide.

Claim 19 also recites "after the formable material is hardened, applying a formable cladding material over the optical waveguide." The final rejection does not address the

"cladding" limitation, and Eide does not teach applying a formable cladding material over a formable waveguide material and does not therefore anticipate claim 19. In his response to arguments, the Examiner states that Eide discloses "a plastic cover over and a sealant material for covering the mounted body, i.e., a cladding material." The term "cladding" in the optical fiber art does not include any cover. As described in the specification, a "cladding has an index of refraction slightly less than that of the core to assist in guiding the light." It is not clear what the Examiner considers the "cladding," but the cover, housing 56, of Eide is not a "cladding" as understood by those skilled in the art.

Claims 20-23, 38, 45-51, and 56-60 stand rejected under 35 U.S.C. 102(b) as anticipated by Malavieille. Claim 20 recites "forming the optical waveguide aligned with the optical component by shaping the formable material using the tool" Like Eide, Malavieille teaches butting the ends of the optical fiber together. "The point of contact between the two fiber ends is not shown, and is not visible in practice." Col. 3, lines 30-32. Malavieille also teaches an index-matching, settable liquid, "preferably a glue" in the groove in which the fibers are placed. Col. 4, lines 58-62. As described above with respect to Eide, the glue is not guiding radiation and is not a "waveguide" as the fibers are butted against each other.

Claim 21 includes molding a support structure to the waveguide. The support structure in Malavieille is plate 8, which is made of glass (col. 4, lines 58-59) and is not molded to anything. The optical fibers are held to the plate 8 by the glue. Col. 4, line 63-68.

Claims 22 includes "contacting a prefabricated molded support structure onto the optical waveguide." Malavieille's glass plate 8 is not a molded support structure.

Claim 38 includes a "light-carrying material contacting the optical fiber and forming a

light path to or from the optical fiber, the light path including . . . a distal end formed into a connecting structure." The adhesive liquid of Malavieille does not form a "connecting structure."

Claims 1, 2, 55, and 56 stand rejected for obviousness over Eide in view of Malavieille. However, the combination fails to teach the claimed invention because neither reference teaches a formable waveguide and neither teaches a formable waveguide carrying light between two components, one of which is an active optical component. As described above with respect to claim 19, the adhesive is not a waveguide. Even if the adhesive were a waveguide, both Eide and Malavieille slice optical fibers and do not teach forming a waveguide to an active component.

Claims 4-13 are rejected for obviousness over Eide in view of Malavieille and further in view of Daniel. Daniel teaches an optical fiber having scattering centered within the fiber and having a protective coating. Daniel does not make up the deficiencies of Eide and Malavieille as described above with respect to the independent claims. With respect to claims 10 and 11, Daniel teaches a protective layer on an optical fiber and does not teach "applying a second formable material to fix the first and second components together in alignment."

Regarding claims 52-54, the Examiner states that it would have been obvious to use bumps as disclosed by US Pat. No. 5,389,312 to Lebby et al ("Lebby") in the method of Eide as modified by Malavieille. Lebby teaches cutting the connector at 52' to leave electrical contacts for attaching an active device using, for example, soldering or bump bonding. Lebby teaches using bumps to attach the active component to an already formed waveguide, but neither Lebby nor the combination teaches or suggests positioning an active component in a precision mold and forming a waveguide between the active component and a second component. Lebby does not

show how bumps would be accurately aligned, that is, Lebby does not teach mating indentations to correspond to the bumps.

Claims 62-70 stand rejected over Malavieille in view of Bischel. The Examiner states that Bischel teaches stencil printing and that it would have been obvious to stencil print the waveguide. Bischel teaches stencil printing a re-radiator material. Bischel deposits a waveguide core 205 over the substrate surface, and then patterns it using , for example, reactive ion etching or laser ablation. Col. 8, lines 1-35. Alternatively, Bischel teaches forming a waveguide using indiffusion. Col 8, lines 56-62. Bischel does not teach stencil printing a formable waveguide material.

Applicants submit that the cited references do not teach or suggest the claimed invention and respectfully request that the reviewers withdraw the rejection.

Respectfully submitted,

7/13/06
Date

By: _____

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